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Enterococcus gallinarum causing cervical vertebral osteomyelitis: Imagery detecting the process of rapid progression of degeneration-like change in 3 months

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ABSTRACT

We present a series of images of X-rays and MRI of vertebral osteomyelitis caused by *Enterococcus gallinarum* in a 65-year-old patient with persistent neck pain and fever accompanied by preceding transient biliary enzymes elevation. Images detected progression of degeneration-like changes of C5–7 in three months, which is too rapid for true degeneration and relatively slow for vertebral osteomyelitis of common pathogens. Though initial imagery evaluation detected merely degenerative change, the patient was followed up monthly because of persistent fever. Three months later, the images detected the typical imagery of vertebral osteomyelitis i.e., the destruction of vertebral bone: narrowing of intervertebral spaces with focal osteosclerosis and osteolysis on C5–7 became prominent. At this point, consultation to general internal medicine was made. With grade 3 regurgitation murmur, transthoracic echocardiography was performed and revealed 14-mm-in-diameter vegetation on aortic valve. Blood cultures detected *Enterococcus gallinarum* of which suspected entry was biliary tract.

No previous case reports of *Enterococcus gallinarum* referred to vertebral osteomyelitis. While this case showed a typical clinical course of infective endocarditis, the course of progression of vertebral osteomyelitis and perhaps endocarditis was much slower comparing to common pathogens. This might reflect the relatively non-life-threatening features of this organism. *Enterococcus gallinarum* shows mild resistance to vancomycin and cephalosporins, initial therapy sometimes fails. *Enterococcus gallinarum* should be newly added to pathogenic candidates of vertebral osteomyelitis especially when feverish patients shows back or neck pain with preceding biliary tract problems.

Explanation of the figure

Progression of degeneration-like changes of C5–7 was detected on a series of X-rays in a 65-year-old patient presenting with neck pain which persisted from August 2021. From July 2021, a fever persisted with transient biliary enzymes elevation: magnetic resonance cholangiopancreatography and upper/lower endoscopic examinations detected no abnormality. Initial X-ray in August shows irregular alignment of C5–7 and osteophytes (Panel A, Panel B: magnified). X-rays show minimal change in September (Panel C) and in October (Panel D). Short T1 inversion recovery (STIR) of Magnetic resonance imaging (MRI) in September shows non-specific minimal deformity of C6/7 which was diagnosed with degenerative change by a radiologist (Panel E). Narrowing of intervertebral spaces with focal osteosclerosis (arrowheads) and osteolysis (arrow) on C5–7 became prominent on the X-ray in November (Panel F). STIR of MRI detected disc-space narrowing, irregular surface of C5/6–6/7 representing destruction of endplates and bone marrow edema (thick arrows) (Panel G), which indicated osteomyelitis. Physical examination detected grade 3 regurgitation murmur and otherwise not remarkable. Though transthoracic echocardiography revealed 14-mm-in-diameter vegetation on aortic valve (Panel H), cardiac function was kept within normal range. Diagnosis with vertebral osteomyelitis with infective endocarditis was made. Spleen was the only site of thromboembolism detected by whole body enhanced computed tomography. *Enterococcus gallinarum* was isolated from blood cultures.

Though the cause of degenerative change or bone destruction is not distinguishable by X-ray, the term of progression is helpful: true degeneration needs years and vertebral osteomyelitis needs weeks

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to months [1]. Practically, early diagnosis is ideal: MRI is the best modality with high sensitivity and specificity [1]. Consequently, vertebral destruction progressed slowly for osteomyelitis in this case, no features of vertebral osteomyelitis were detectable in the initial MRI. *Enterococci* show relatively non-life-threatening pathogenicity in nature [2]. *Enterococcus gallinarum* consists of a normal intestinal microbiota and is mainly detected as surgical site infection, as bacteremia of immunosuppressive patients by any cause or as bacteremia in immunocompetent patients of which 75% are with biliary tract obstruction [3]. *Enterococcus gallinarum* is susceptible to ampicillin with innate resistance to vancomycin, cephalosporins or other antimicrobials: initial empirical therapy for endocarditis sometimes fails [4]. The prevalence of endocarditis caused by *Enterococcus gallinarum* is increasing [5]. *Enterococcus gallinarum* should be newly added to pathogenic candidates of vertebral osteomyelitis especially when feverish patients shows back or neck pain with preceding biliary tract problems.

Ethical approval

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The author has no competing interest with this manuscript to declare.

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Availability of the data in this manuscript

This manuscript contains no data other than images of the patient. The author agrees that images on this manuscript are not reused in the same form without written consent of the copyright-holder, if accepted.

Conflicts of interest

The author has no conflict of interest to declare relating this manuscript.

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